

commuter category airplanes, takeoff performance, as required by §§ 23.55 through 23.59, must be determined with the operating engine(s) within approved operating limitations.

[Doc. No. 27807, 61 FR 5185, Feb. 9, 1996, as amended by Amdt. 23-62, 76 FR 75753, Dec. 2, 2011]

§ 23.55 Accelerate-stop distance.

For normal, utility, and acrobatic category multiengine jets of more than 6,000 pounds maximum weight and commuter category airplanes, the accelerate-stop distance must be determined as follows:

(a) The accelerate-stop distance is the sum of the distances necessary to—

(1) Accelerate the airplane from a standing start to V_{EF} with all engines operating;

(2) Accelerate the airplane from V_{EF} to V_1 , assuming the critical engine fails at V_{EF} ; and

(3) Come to a full stop from the point at which V_1 is reached.

(b) Means other than wheel brakes may be used to determine the accelerate-stop distances if that means—

(1) Is safe and reliable;

(2) Is used so that consistent results can be expected under normal operating conditions; and

(3) Is such that exceptional skill is not required to control the airplane.

[Amdt. 23-34, 52 FR 1826, Jan. 15, 1987, as amended by Amdt. 23-50, 61 FR 5185, Feb. 9, 1996, as amended by Amdt. 23-62, 76 FR 75753, Dec. 2, 2011]

§ 23.57 Takeoff path.

For normal, utility, and acrobatic category multiengine jets of more than 6,000 pounds maximum weight and commuter category airplanes, the takeoff path is as follows:

(a) The takeoff path extends from a standing start to a point in the takeoff at which the airplane is 1500 feet above the takeoff surface at or below which height the transition from the takeoff to the enroute configuration must be completed; and

(1) The takeoff path must be based on the procedures prescribed in § 23.45;

(2) The airplane must be accelerated on the ground to V_{EF} at which point the critical engine must be made inoper-

ative and remain inoperative for the rest of the takeoff; and

(3) After reaching V_{EF} , the airplane must be accelerated to V_2 .

(b) During the acceleration to speed V_2 , the nose gear may be raised off the ground at a speed not less than V_R . However, landing gear retraction must not be initiated until the airplane is airborne.

(c) During the takeoff path determination, in accordance with paragraphs (a) and (b) of this section—

(1) The slope of the airborne part of the takeoff path must not be negative at any point;

(2) The airplane must reach V_2 before it is 35 feet above the takeoff surface, and must continue at a speed as close as practical to, but not less than V_2 , until it is 400 feet above the takeoff surface;

(3) At each point along the takeoff path, starting at the point at which the airplane reaches 400 feet above the takeoff surface, the available gradient of climb must not be less than—

(i) 1.2 percent for two-engine airplanes;

(ii) 1.5 percent for three-engine airplanes;

(iii) 1.7 percent for four-engine airplanes; and

(4) Except for gear retraction and automatic propeller feathering, the airplane configuration must not be changed, and no change in power that requires action by the pilot may be made, until the airplane is 400 feet above the takeoff surface.

(d) The takeoff path to 35 feet above the takeoff surface must be determined by a continuous demonstrated takeoff.

(e) The takeoff path to 35 feet above the takeoff surface must be determined by synthesis from segments; and

(1) The segments must be clearly defined and must be related to distinct changes in configuration, power, and speed;

(2) The weight of the airplane, the configuration, and the power must be assumed constant throughout each segment and must correspond to the most critical condition prevailing in the segment; and